



**THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI-15**  
(A Govt. Aided Autonomous Institution affiliated to Anna University)  
- where quality and ethics matter

# IoT BASED PRODUCT RECOMMENDATION SYSTEM USING MACHINE LEARNING

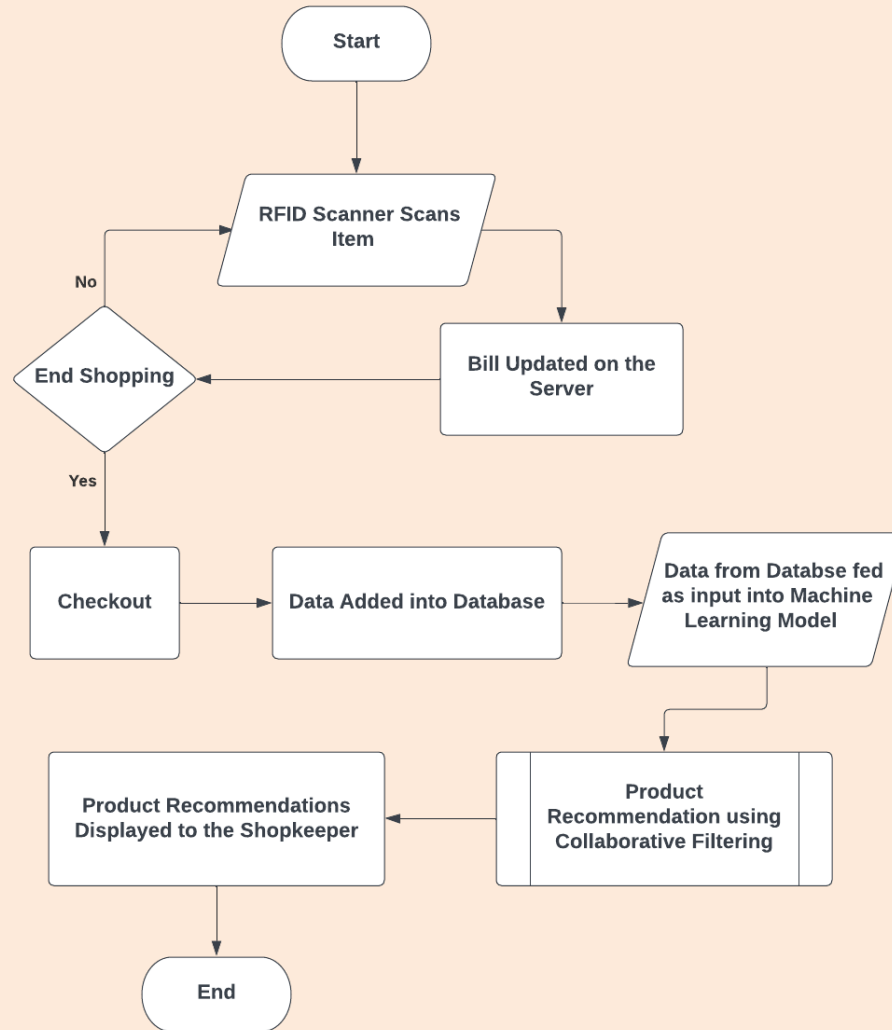
**GUIDE :**  
**Dr. C. Sridharan**

**TEAM MEMBERS :**  
**Nitin Vinayak S (19C062)**  
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# OBJECTIVES

- To automate the billing process instead of waiting for long queues at stores.
- To recommend a particular product and all of its related products based on the availability of current stocks and arrival of new stocks.
- To manage the stocks better by collecting the necessary information such as the goods sold, available goods and to recommend the frequently sold products and their related products.
- To implement better marketing strategies, to increase the sales of goods and services and make the business profitable.

# DESIGN OF THE SYSTEM



# CONTRIBUTIONS

<b>NITIN VINAYAK S</b>	<b>RAJARAJESVARRI G</b>
Collected Dataset to Train the Machine Learning Model & Testing the Model	Code for the Machine Learning Model
Display the Machine Learning Model's output in a website using Flask	Integration of Hardware Components
Research Paper	Research Paper

# RESULTS & DISCUSSIONS

- Collection of Dataset using RFID
  - The dataset for the construction of the the Machine Learning Model has been collected.
- Built Machine Learning Model (i.e Product Recommendation Engine)
  - The model has been successfully run using a sample dataset. The model is being constructed for our dataset.
- Integration of Python Flask
  - In-order to display the list of recommended products in the web-app a flask module has been used.

# ACTION PLAN

## FOR COMPLETION OF THE PROJECT

Works	Description	Start date	End date	Status
Domain and Sub-Domain	Selecting Domain(IoT) and Sub-Domain(ML)	Jan 4 <sup>th</sup> , 2023	Jan 8 <sup>th</sup> 2023	Completed
Literature Survey	Studied IEEE, Springer, Wiley, Tech Science Press journals	Jan 9 <sup>th</sup> ,2023	Jan 15 <sup>th</sup> ,2023	Completed
Problem Statement	Formulation of the problem Statement	Jan 16 <sup>th</sup> ,2023	Jan 19 <sup>th</sup> ,2023	Completed
Methodology	Identifying different methods of implementation	Jan 21 <sup>st</sup> ,2023	Feb 1 <sup>st</sup> ,2023	Completed
Dataset collection	Collecting required datasets	Feb 2 <sup>nd</sup> ,2023	Feb 9 <sup>th</sup> ,2023	Completed
Code for Machine Learning Model	ML Model for Recommendation of Products to Shopkeepers	Feb 11 <sup>th</sup> , 2023	Feb 28 <sup>th</sup> , 2023	Completed
Integration using Flask	To display the Product Recommendations to the Shopkeepers	Mar 1 <sup>st</sup> , 2023	Mar 9 <sup>th</sup> , 2023	Yet to be Completed

# REFERENCES

S.NO	Author	Title	Journal / Conference	DOI / Link
1	Satheesan, P., Haddela, P. S., & Alosius, J.	Product Recommendation System for Supermarket	19th IEEE International Conference on Machine Learning and Applications (ICMLA)	10.1109/ICMLA51294.2020.00151
2	Gupte, R., Rege, S., Hawa, S., Rao, Y. S., & Sawant, R.	Automated Shopping Cart Using RFID with a Collaborative Clustering Driven Recommendation System	Second International Conference on Inventive Research in Computing Applications (ICIRCA)	10.1109/ICIRCA48905.2020.9183100
3	Shankar, S. K., Balasubramani, S., Basha, S. A., Ahamed, S. A., & Reddy, N. S. K.	Smart Trolley for Smart Shopping with an Advance Billing System using IoT	5th International Conference on Computing Methodologies and Communication (ICCMC)	10.1109/iccmc51019.2021.9418348
4	Balamurugan, M., Prabhakar, G., Amsaveni, G., Karthikumar, M., Shifa, J. J., & Sharmila, E.	IoT-based Intelligent Mobile Application for Shopping	International Conference on Automation, Computing and Renewable Systems (ICACRS)	10.1109/ICACRS55517.2022.10029137

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S.NO	Author	Title	Journal / Conference	DOI / Link
5	Mekruksavanich, S.	Supermarket Shopping System using RFID as the IoT Application	Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON)	10.1109/ECTIDAMTNCN48261.2020.9090714
6	Hameed, M. A., Al Jadaan, O., & Ramachandram, S.	Collaborative Filtering based Recommendation System: A Survey	International Journal on Computer Science and Engineering	<a href="#">Collaborative Filtering based Recommendation System: A Survey</a>
7	Srifi, M., Oussous, A., Ait Lahcen, A., & Mouline, S.	Recommender Systems based on Collaborative Filtering using Review Texts - A Survey.	Information, 11(6), 317	10.3390/info11060317



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S.NO	Author	Title	Journal / Conference	DOI / Link
8	Suárez, Franz & Caiza, Germán & Yoo, Sang Guun.	Stock Management System using RFID and Geolocation Technologies.	International Journal of Applied Engineering Research. 12.	<a href="#">Stock Managenment System using RFID and Geolocation Technologies</a>
9	Vidyaetal, K, P.	Virtual Cart : Novel Approach for Revamping Smart Shopping Experience	Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER)	10.1109/ discover.2018.8674117

# CATEGORY OF THE PROJECT

## Research & Development (R&D)

The goal of a R&D project is generally to increase efficiency of the existing product and to contribute towards growth and success.

In today's world, barcodes are the typical means of billing. But with RFID tags getting cheaper, this might see a significant change in the future. Considering the fact, that RFID scanning and billing also proves to be much secure, it may be the future of standard billing in offline stores.

Hence, our project falls under the category of R&D.